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ABSTRACT

An extension of a doctoral dissertation that studied a group of high school seniors while they used the library for two assigned research papers, this paper presents a process approach to library skills instruction for high school students. The doctoral study traced the research process used by the students through a number of devices including questionnaires, interviews, journals, timelines, and flow charts. This paper includes a review of the literature, a discussion of the cognitive process used in library research, and a six-stage timeline of the library research process: (1) initiating a research assignment; (2) selecting a topic; (3) exploring information; (4) forming a focus; (5) collecting information; and (6) preparing to present. Some techniques to help students evaluate their own library research are suggested, and the importance of engaging the intellect of students as they develop their research topics is noted. An 11-item bibliography is included. (THC)

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A PROCESS APPROACH TO LIBRARY SKILLS INSTRUCTION

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For many years, elementary and high school librarians have been conscientiously teaching library skills to their students. Academic librarians, however, continue to find that incoming students have difficulty using the library for their research assignments. Biggs notes that "incoming freshmen lack all but the most rudimentary library skills. They have no inkling of what sources are available, when to ask questions or even what to ask for."[1] Dickinson warns that there is "an epidemic in library illiteracy."[2] A study of Bucknell students found that "students failed to use logical progression and systematic approaches to checking sources of information....The concept of research on the part of many students appears to be limited and unsophisticated."[3]

Biggs suggests that the problem centers around librarians assuming a title orientation to library skills instruction, rather than a process orientation. Students are introduced to various library sources and access points but they rarely learn the process of developing an understanding of a topic through library research. "To be of maximum use the skills must be more process oriented."[4]

Designing process oriented instruction was the problem which I investigated in my doctoral dissertation. A group of high school seniors were studied while they used the library for two assigned research papers. I sought to learn more about the process which they were experiencing and to design instruction which would assist them in learning the process of library research as well as the sources in the library.

The research process of the students was traced through a number of devices including questionnaires, interviews, journals, timelines and flow charts. I found that students not only needed

but wanted guidance in the process which they were working through as they were using the library. One student described the need for more guided instruction in this way.

> I would prefer if teachers were more demanding. I guess it's more grownup to say, "Here you have a research paper. It's due in four weeks, do it." It's all on your own, I guess, research papers are. But they never ask during the four weeks, they never remind you that you're doing a research paper. Just at the end of three and a half weeks they say, "Your research paper is due in three days." The teacher could have done something in between, given us ideas. Teachers are so nonchalant about giving research papers.... I don't know what teachers expect because it seems they just say you have this research paper due. They don't discuss it with you. I don't know if they think you are really researching for four weeks or if they know that you are procrastinating because they used to do it. In the meantime, the teacher isn't really being there. I don't think teachers should say, "Let me see your notecards." But they should say, "Ok, tomorrow we will talk about what you found and if you have any problems or what point you are at." (They should) not pressure you. "Well, if you haven't started, just forget it." Sometimes you haven't started because you don't know what you are about. It would help to know if everyone else was lost too.5

"Being there" involves seeing the research through, from beginning to end. Students need help in recognizing the various stages typical to the research process. They also need guidance in learning useful strategies to apply at the various stages in the process. Once they understand the process and know some useful strategies, they are better equipped to transfer their library skills to other research situations in other libraries.

Cognitive Process used in Library Research

The process of developing an understanding of a topic through library research may be compared to the process of incorporating any new experience into one's existing system of

constructs. Swiss psychologist, Jean Piaget described the process as assimilating and accommodating new information into a schema. The study of cognitive processes has become a major thrust in current psychological inquiry. Jerome Bruner called the cognitive revolution the "Big Bang" in psychology.[6] Ulrich Neisser and other cognitive psychologists continue to study the process which encompasses all learning.

Psychologist George A. Kelly described the feelings one might expect to experience in the process of assimilating new experience or information. First, there is a feeling of doubt in both the capacity to understand and the validity of the new idea. Then, as more information is encountered, the person becomes confused and sometimes threatened. At this point, the person chooses to abandon the new idea or to press on by forming a hypothesis. Kelly turns to a scientific analogy for describing the remainder of the process. The person tests the hypothesis and assesses the results, accepting or rejecting the new information accordingly. On the basis of the results, a new construct is formed or an existing one is verified.[7]

The high school students in my study were found to experience a similar succession of feelings to those described by Kelly. When they first were given a research assignment, they were uncertain as to how to proceed and what was expected of them. As they encountered the variety of information in the library, they became confused, discouraged, and even threatened. At this point, they were encouraged to form a focus for their research,

much like Kelly's hypothesis. After the focus was established, they were able to move on to gather information and to prepare their presentation.

Studies of the search behavior of information users also sheds light on the research process of students. Information scientists have found that people experience different levels of information need. In a study of college students, Taylor identified four levels of information need.[8]

Visceral - An actual but unexpresses need; a vague sort of dissatisfaction.

Conscious - An illdefined area of indecision expressed in an ambigious, rambling statement.

Formal - An area of doubt described in concrete terms.

Compromised - A need for information translated into what the files can deliver.

The levels of information need parallel the cognitive psychologists stages of assimilating new information. The levels and stages describe a hierarchy which people work through in the library research process. At each level, library sources are used in different ways for different purposes. Students need to learn search strategies which match their level of information need.

The process of assimilating new information is the complex process which students are involved with in library research. They need to understand the research process in order to be able to effectively locate and use information in libraries.

Timeline of the Library Research Process

A model of the library research process was developed from the findings of the study of the high school seniors.

Six successive stages were identified which can be used for describing the process to students enabling them to visualize what they can expect to encounter. In addition, some strategies were developed for each stage to help students work through the process.[9]

(insert chart of Timeline of the Library Research Process)

Stage 1: Initiating a Research Assignment

The task of the first stage is to prepare for the decision of selecting a topic. Students often feel apprehensive and uncertain of what is expected of them. Some students in the study described feeling "depressed and bogged down" and "overwhelmed at the amount of work ahead." It is helpful to acknowledge these feelings and to offer specific directions on how to begin.

At the beginning, students need to visualize the entire process that is ahead of them. The timeline of the research process can be used to demonstrate the stages and the tasks which need to be accomplished within each stage. When students know what to expect, they can learn to plan their research to allow for sufficient time to work through the entire process.

Students should have a genuine need for information which motivates and stimulates interest in their library research. Although this is not easily accomplished, it should be one of the main objectives in designing a research assignment. Broadening the audience of library research is one way of establishing a meaningful purpose for an assignment. For example, the audience might include other class members, a debating club, civic groups, or elected officials. Also, articles in the school newspaper,

TIMELINE OF THE LIBRARY RESEARCH PROCESS

Stages	Receive Assignment	Select Topic	Explore for Focus	Form Focus	Collect Information	Prepare to Present
Feelings	uncertainty	optimism	confusion/ frustration/ doubt	clarity	sense of direction/ confidence	relief/ sense of satisfaction or dissatisfaction
Thoughts		ambiguity ---------->			specificity	
				----------> increased interest		
Actions	seeking relevant information ---------->				seeking pertinent information	

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Teaching the Library Research Process. Center for Applied Research in Education, 1985.

contests, forums are some devices which can be used to present student library research findings beyond the traditional audience of the teacher.

In this stage, students need to begin to think of possible research topics. Talking and writing helps students to think about their research in preparation for selecting a topic. Brainstorming sessions are useful for generating ideas for research topics. Keeping a journal of their thoughts, feelings and actions is also helpful for students in this stage.

Stage 2: Selecting a Topic

The task of the second stage is to decide on a topic to research. Students need to think of possible topics and to choose the one with the most potential for success. The possible topics may be weighed against the criteria of personal interest, assignment requirements, information available, and time allotted.

During the period when students are uncertain about what topic to choose, they may become somewhat anxious. After they decide on a research topic, they often experience a brief sense of elation followed by apprehension at the task ahead. They usually move through this stage quickly, experiencing the feelings in rapid succession. However, if they are unable to decide on a topic, they may become progressively more anxious.

Although the library is rarely used in this stage, students can learn to make effective use of the library collection to help in their topic selection. They can learn that a preliminary search of library sources may indicate whether a topic is viable for library research. They also can learn that the

reference collection, particularly encyclopedias, offers a useful overview of perspective topics.

Talking about possible topics is helpful in this stage and is a strategy some students use on their own. Opportunities for discussion with other students and with the teacher or librarian can be arranged to help students to make good choices in their selection of a topic.

Stage 3: Exploring Information

The task of the third stage is to explore information with the intent of finding a focus. Students need to become informed about the general topic and to identify possible ways to focus the topic.

As they find information about their topic, they frequently become confused by the inconsistancies and incompatabilities which they encounter. The feeling of confusion can become quite threatening and some students want to drop their topics at this point. For many students, this is the most difficult stage of the library research process.

Students need to learn to tolerate their own uncertainties when the information they encounter is confusing. They need to read to learn about the topic. They should be encouraged to slow down to absorb what they are reading. In addition, they need to be alerted to the necessity of intentionally seeking a focus for their research.

Most students start to take detailed notes as soon as they begin to find information about their topic. Extensive note-taking should be deferred to a later stage, after a focus has

been formed. During the exploring information stage, notes should consist of lists of such information as, terms, events, people, and places and brief notations of ideas. However, students should be urged to keep bibliographic citations of all sources which they use in order to locate them later in the research process and also to avoid plagerism.

Students should be encouraged to explore a wide range of materials in preparation for forming a focus for their research. They need to become familiar with the various collections in a library and to learn the differences in the information presented in each type of source.

Stage 4: Forming a Focus

The task of the fourth stage is to form a focus for the research from the information on the general topic found in library sources. Students need to identify possible ways to focus their topic and choose one around which to center their information gathering.

The four criteria used to select a topic may be again employed to choose a focus. The focus should be of personal interest, meet the requirements of the assignment, be able to be researched in available materials, and be able to be accomplished within the time allotted.

Strategies which help students to form a focus again involve talking and writing. By listing possible ways to focus a research topic, students can begin to see the pitfalls in some of their ideas. Discussing possible choices also helps students to think throughtheir decisions. In these ways, they

learn to intelligently form a focus for their library research.

Stage 5: Collecting Information

Once students have formed a focus for their research, they are ready to begin to collect information. The task of this stage is to gather information which defines, extends, and supports their focus.

At this point, students have a sense of direction and are more confident, although they also realize the extent of the work to be done. Their interest in their topic often increases during this stage. In this stage, many students use library sources quite independently. They have reached Taylor's formal level of information need and can express what they are seeking in clear, concrete terms.

Students need to learn to collect only information which is pertinent to their focus. They need to learn to make a comprehensive search of all of the sources in the library, including periodicals and reference materials which might be overlooked. They need to learn to think of the library as a whole information source and to extend their search beyond being satisfied with a few books located through the card catalog. Detailed notes with complete bibliographic citations need to be taken in this stage.

Stage 6: Preparing to Present

The task of the last stage of the library research process is to conclude the search for information and to prepare to present the findings. Students can learn to recognize the signs that they have exhausted the library resources available.

The information they are encountering should be decreasing in relevance and increasing in redundancy. They can also learn to identify any need for additional information.

Students usually feel a sense of relief in this stage. When the library research has been successfully completed, they have a sense of satisfaction. However, they may experience disappointment in the way they approached the assignment or in the results of their library search.

Students can learn to make a summary check of library sources to confirm information and to note anything that may have been initially overlooked. Finally, they need some direction in organizing their notes, making an outline, writing a rough draft, and preparing their final copy with footnotes and a bibliography.

Assessing the Process

Evaluation is an important part of learning. Students need constructive feedback on the effectiveness of their library research process. The traditional grade on the research paper rarely tells students much about how to improve their library research.

There are some techniques to help students reflect on their library research. They can draw timelines and flow charts of the process which they have experienced. Opportunities to discuss their process may be offered in individual conferences and group sessions. Also, having students write a summary paragraph on the focus of their paper helps them to determine whether they had a clear, central idea for their research.

Engaging the Intellect of Students

Lindgren recommends that library skills instruction seek a "more active engagement of the intellect of users."[10] What has frequently been diagnosed as a writing problem in student research papers is actually a thinking problem. Students have not sufficiently thought through their topics to write an intelligent research paper. The thoughts to be presented in a research paper need to be developed during the library research process.

One student described difficulty writing a paper which was not researched around a central focus.

> I had a general idea not a specific focus, but an idea. As I was writing, I didn't know what my focus was. When I was finished, I didn't know what my focus was. My teacher says she doesn't know what my focus was. I don't think I ever acquired a focus. It was an impossible paper to write. I would just sit there and say, "I'm stuck." There was no outline because there was no focus and there was nothing to complete. If I learned anything from that paper it is, you have to have a focus. You have to have something to center on. You can't just have a topic. You should have an idea when you start. I had a topic but I didn't know what I wanted to do with it. I figured that when I did my research it would focus in. But I didn't let it. I kept saying, "this is interesting and this is interesting and I'll just smush it all together." It didn't work out. 11

The process approach to teaching library research seeks to "Actively engage the intellect of users." Students need to be guided through the levels of thinking while they are researching a topic in the library. Understanding the research process enables students to more intelligently use library sources and to transfer their ability to other situations of information need in other libraries.

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